

This listing of claims will replace all prior versions, and listing, of claims in the application.

Listing of Claims:

~~Claim 1~~ (currently amended): A method of conductively cooling a heat-generating electronic component having an operating temperature range above normal room temperature and a first heat transfer surface disposable in thermal adjacency with a second heat transfer surface of a thermal dissipation member to define an interface therebetween, said method comprising the steps of:

(a) providing a thermally-conductive material which is form-stable at normal room temperature in a first phase and conformable in a flowable second phase to substantially fill said interface, said material having a transition temperature from said first phase to said second phase within the operating temperature range of said electronic component, and said material ~~consisting essentially of at least one~~ comprising a first resin or wax component or mixture thereof blended with having a first melting temperature of from about 90-100°C, a second resin or wax component having a second melting temperature of from about 50-60°C, and at least one thermally-conductive filler;

(b) ~~forming~~ applying said material ~~into a self-supporting and free-standing film in the form of a layer, said layer consisting essentially of said material and having a thickness of from about 1-10 mils;~~

(e) ~~applying said layer~~ to one of said heat transfer surfaces;

(d c) disposing said heat transfer surfaces in thermal adjacency to define said interface;
and

(e d) energizing said electronic component effective to heat said layer to a temperature which is above said phase transition temperature.

Claim 2 (currently amended): The method of claim 1 further comprising an additional step between steps (d c) and (e d) of applying an external force to at least one of said heat transfers defining said interface.

Claim 3 (original): The method of claim 1 wherein said thermal dissipation member is a heat sink or a circuit board.

Claim 4 (original): The method of claim 1 wherein said layer is applied in step (c) to the heat transfer surface of said electronic component.

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Claim 5 (currently amended): The method of claim 1 wherein said self-supporting layer is ~~formed~~ applied in step (b) by coating a film of said material onto a surface of a release sheet, ~~and wherein said layer is applied in step (c) by adhering said film to one of said heat transfer and removing said release sheet to expose said film.~~

Claim 6 (cancelled).

Claim 7 (original): The method of claim 6 1 wherein said material has a phase transition temperature of from about 60-80°C.

Claim 8 (original): The method of claim 6 1 wherein said one or more thermally-conductive fillers is selected from the group consisting of boron nitride, alumina, aluminum oxide, aluminum nitride, magnesium oxide, zinc oxide, silicon carbide, beryllium oxide, and mixtures thereof.

Claim 9 (currently amended): A thermally-conductive interface for interposition between a heat-generating electronic component having an operating temperature range above normal room temperature and a first heat transfer surface disposable in thermal adjacency with a second heat transfer surface of a thermal dissipation member, said interface comprising a ~~self-supporting and free-standing film~~ layer ~~having a thickness of from about 1-10 mils and consisting essentially~~ of a thermally-conductive material which is form-stable at normal room temperature in a first phase and substantially conformable in a flowable second phase to said interface surfaces, said material having a transition temperature from said first phase to said second phase within the operating temperature range of said electronic component, and said material ~~consisting~~

~~essentially of at least one~~ comprising a first resin or wax component or mixture thereof blended with having a first melting temperature of from about 90-100°C, a second resin or wax component having a second melting temperature of from about 50-60°C, and at least one thermally-conductive filler.

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Claim 10 (original): The interface of claim 9 which is coated as a film onto a surface of a release sheet.

Claim 11 (cancelled).

Claim 12 (currently amended): The interface of claim ~~11~~ 9 wherein said material has a phase transition temperature of from about 60-80°C.

Claim 13 (currently amended): The interface of claim ~~11~~ 9 wherein said one or more thermally-conductive fillers is selected from the group consisting of boron nitride, alumina, aluminum oxide, aluminum nitride, magnesium oxide, zinc oxide, silicon carbide, beryllium oxide, and mixtures thereof.

Claim 14 (allowed): A method of conductively cooling a heat-generating electronic component having an operating temperature range above normal room temperature and a first heat transfer surface disposable in thermal adjacency with a second heat transfer surface of a thermal dissipation member to define an interface therebetween, said method comprising the steps of:

(a) providing a thermally-conductive material which is form-stable at normal room temperature in a first phase and conformable in a second phase to substantially fill said interface, said material having a transition temperature from said first phase to said second phase within the operating temperature range of said electronic component and comprising a blend of:

(i) from about 25 to 50% by weight of an acrylic pressure sensitive adhesive component having a melting temperature of from about 90-100°C;

(ii) from about 50 to 75% by weight of an α -olefinic, thermoplastic component having a melting temperature of from about 50-60°C; and

(iii) from about 20 to 80% by weight of one or more thermally-conductive fillers;

(b) forming said material into a self-supporting layer;

(c) applying said layer to one of said heat transfer surfaces;

(d) disposing said heat transfer surfaces in thermal adjacency to define said interface;

and

(e) energizing said electronic component effective to heat said layer to a temperature which is above said phase transition temperature.

Claim 15 (allowed): The method of claim 14 wherein said material has a phase transition temperature of from about 70-80°C.

Claim 16 (allowed): The method of claim 14 wherein said one or more thermally-conductive fillers is selected from the group consisting of boron nitride, alumina, aluminum oxide, aluminum nitride, magnesium oxide, zinc oxide, silicon carbide, beryllium oxide, and mixtures thereof.

Claim 17 (allowed): A thermally-conductive interface for interposition between a heat-generating electronic component having an operating temperature range above normal room temperature and a first heat transfer surface disposable in thermal adjacency with a second heat transfer surface of a thermal dissipation member, said interface comprising a self-supporting layer of a thermally-conductive material which is form-stable at normal room temperature in a first phase and substantially conformable in a second phase to said interface surfaces, said material having a transition temperature from said first phase to said second phase within the operating temperature range of said electronic component, and comprising a blend of:

(a) from about 25 to 50% by weight of an acrylic pressure sensitive adhesive component having a melting temperature of from about 90-100°C;

(b) from about 50 to 75% by weight of an α -olefinic, thermoplastic component having a melting temperature of from about 50-60°C; and

(c) from about 20 to 80% by weight of one or more thermally-conductive fillers.

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Claim 18 (allowed): The interface of claim 17 wherein said material has a phase transition temperature of from about 70-80°C.

Claim 19 (allowed): The interface of claim 17 wherein said one or more thermally-conductive fillers is selected from the group consisting of boron nitride, alumina, aluminum oxide, aluminum nitride, magnesium oxide, zinc oxide, silicon carbide, beryllium oxide, and mixtures thereof.

